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(54) Title: COSMETIC COMPOSITIONS

(57) Abstract: According to the present invention there is provided a cosmetic composition comprising: (a) at least one quaternary ammonium agent; (b) emollient; and (c) polar solvent; wherein the composition comprises vesicles, said vesicles comprising quaternary ammonium agent and emollient. The compositions of the present invention give good skin care benefits, such as good skin feel, good skin softness and/or good skin smoothness, with low levels of negatives such as greasiness, stickiness or tack.

WO 01/00147 A1

COSMETIC COMPOSITIONS

Technical Field

The present invention relates to cosmetic compositions. In particular, the present invention relates to cosmetic compositions that provide good skin feel, skin softness and/or skin smoothness benefits.

Background to the Invention

Skin is made up of several layers of cells which coat and protect the keratin and collagen fibrous proteins that form the skeleton of its structure. The outermost of these layers, referred to as the stratum corneum, is known to be composed of 25nm protein bundles surrounded by 8nm thick layers. Anionic surfactants and organic solvents typically penetrate the stratum corneum membrane and, by delipidization (i.e. removal of the lipids from the stratum corneum), destroy its integrity. This destruction of the skin surface topography leads to a rough feel and may eventually permit the surfactant or solvent to interact with the keratin, creating irritation.

It is now recognised that maintaining the proper water gradient across the stratum corneum is important to its functionality. Most of this water, which is sometimes considered to be the stratum corneum's plasticizer, comes from inside the body. If the humidity is too low, such as in a cold climate, insufficient water remains in the outer layers of the stratum corneum to properly plasticize the tissue, and the skin begins to scale and becomes itchy. Skin permeability is also decreased somewhat when there is inadequate water across the stratum corneum. On the other hand, too much water on the outside of the skin causes the stratum corneum to ultimately sorb three to five times its own weight of bound water. This swells and puckers the skin and results in approximately a two to three fold increase in the permeability of the skin to water and other polar molecules.

Thus, a need exists for compositions which will assist the stratum corneum in maintaining its barrier and water-retention functions at optimum performance in spite of deleterious interactions which the skin may encounter in washing, work, and recreation.

In the past compositions have been formulated that are claimed to assist the stratum corneum in maintaining its barrier and water-retention functions. Such compositions have attempted to maintain these functions by the use of one or more 'skin benefit agents'. For example, one way of delivering desirable benefits to the skin is to incorporate emollient materials into the skin care compositions. These emollient materials retard the loss of moisture from the skin and also serve a protective function. However, they can also suffer serious negatives in terms of skin feel (i.e. they often feel very greasy on the skin) as well as having poor rub-in, absorption and residue characteristics. An example of an emollient material is polyol polyester oils. These are known for use in cosmetic compositions. See, for example, US-A-6,013,271 which discloses a skin care composition in the form of an oil-in-water emulsion comprising an oil phase which includes liquid polyol carboxylic acid ester, water; and an organic liquid crystal-forming amphiphilic emulsifier material. Also, US-A-5,916,575 which discloses a non-emulsified personal cleansing composition comprising a lathering surfactant, water and an insoluble skin conditioning component which can be a solid polyol carboxylic acid ester and an insoluble skin conditioning oil.

There appears to be a direct relationship between the amount of the skin benefit agent and the effectiveness of the composition at delivering benefits to the skin. However, it is also the case that the higher the level of skin benefit agent the higher the risk of the associated negatives. Therefore, to date, it has been necessary to balance the benefits of compositions comprising high levels of the skin benefit agents against the negatives associated with such high levels. Thus, there remains a need for compositions which contain high levels of skin benefit agents, and therefore provide high levels of the associated benefits such as skin feel, skin softness and skin smoothness, but show low levels of the associated negatives such as greasiness, stickiness or tackiness.

Quaternary ammonium agents are also known for use in cosmetic compositions. See, for example, WO-A-99/27904, WO-A-96/32089, and EP-A-789,076. Also, US-A-5,804,205 which discloses skin care compositions which are claimed to provide a high degree of moisturisation without leaving a "tacky" or "sticky" residue. The compositions contain quaternary ammonium compounds having two alkyl groups of 16-22 carbon atoms, humectant and non-irritating hydrophobic microspheres having an average particle size of less than 50 μm. It is claimed that the hydrophobic polymeric microspheres significantly reduce the "tackiness" associated with high humectant levels. The compositions of US-A-5,804,205 may also contain low levels of emollients such as petrolatum or mineral oil.

It has now been unexpectedly found that compositions comprising at least one quaternary ammonium agent, emollient and a polar solvent, wherein the compositions comprise vesicles comprising quaternary ammonium agent and emollient, provide high levels of the associated benefits such as skin feel, skin softness and skin smoothness, but show low levels of the associated negatives such as greasiness, stickiness or tackiness.

While not wishing to be bound by theory, it is believed that the quaternary ammonium agents of the present invention form vesicles that incorporate the emollient materials. The polar solvent is necessary to drive the formation of these vesicles. In addition to the emollient contained in the vesicles it is believed that the remaining emollient is emulsified by the quaternary ammonium agent. It is believed that the vesicles ensure a smooth, uniform application of the emollient to the skin with minimal tack/stickiness/greasiness. Even when the compositions comprise extremely high percentages of emollient, for example 20% by weight, there are only low levels of the usual negatives. Also, it is believed that the quaternary ammonium agents help reduce the loss of emollient from the skin due to environmental factors such as water or abrasion and hence extend the length of the emollient derived benefits. Moreover, it is believed that the quaternary ammonium agents themselves deliver skin care benefits, such as good moisturisation, good skin feel, good skin softness.

Summary of the Invention

According to the present invention there is provided a cosmetic composition comprising:

(a) at least one quaternary ammonium agent;

(b) emollient; and

(c) polar solvent;

wherein the composition comprises vesicles comprising quaternary ammonium agent and emollient.

The compositions of the present invention give good skin care benefits, such as good moisturisation, good hydration, good skin feel, good skin softness and/or good skin smoothness, with low levels of negatives such as greasiness, stickiness or tack.

Detailed Description of the Invention

The compositions of the present invention at least one quaternary ammonium agent, emollient and polar solvent, wherein the composition comprises vesicles, said vesicles comprising quaternary ammonium agent and emollient. These elements will be described in more detail below.

The present compositions can be used for any suitable purpose. In particular, the present compositions are suitable for topical application to the skin. In particular, the skin care compositions can be in the form of creams, lotions, gels, and the like. Preferably the cosmetic compositions herein are in the form of an oil-in-water emulsion of one or more oil phases in an aqueous continuous phase, each oil phase comprising a single oily component or a mixture of oily components in miscible or homogeneous form but said different oil phases containing different materials or combinations of materials from each other.

Preferably the compositions of the present invention comprise less than 10%, preferably less than 5%, more preferably less than 3%, even more preferably 0%, by weight, of anionic surfactant.

The compositions of the present invention are preferably formulated so as to have a product viscosity of at least about 1,000 mPa.s and preferably in the range from about 1,000 to about 300,000 mPa.s, more preferably from about 2,500 to about 250,000 mPa.s and especially from about 5,000 to about 200,000 mPa.s (26.8°C, neat, Brookfield DV-II+ Spindle CP52/CP41).

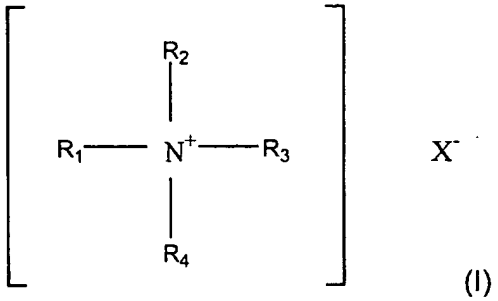
Quaternary Ammonium Agent

The compositions of the present invention must comprise at least one quaternary ammonium agent. Any quaternary ammonium agent suitable for use in cosmetic compositions may be used herein. As used herein the term "quaternary ammonium agent' means a compound or mixture of compounds having a quaternary nitrogen atom substituted with one or more, preferably two, moieties containing six or more carbon atoms. Preferably the quaternary ammonium agents for use herein are selected from those having a quaternary nitrogen substituted with two moieties wherein each moiety comprises ten or more, preferably 12 or more, carbon atoms.

Preferably the present compositions comprise at least 0.01%, more preferably at least 0.1%, even more preferably at least 1.5%, still more preferably at least 3%, by weight, of quaternary ammonium agent.

Preferably the quaternary ammonium agents for use herein are selected from:

(a) quaternary ammonium compounds according to general formula (I):



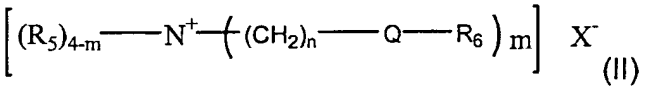
(I)

wherein, R_1 & R_2 are each C_1-C_4 alkyl or C_1-C_4 hydroxyalkyl groups or hydrogen. R_3 & R_4 are each alkyl or alkenyl groups having from about 8 to about 22 carbon

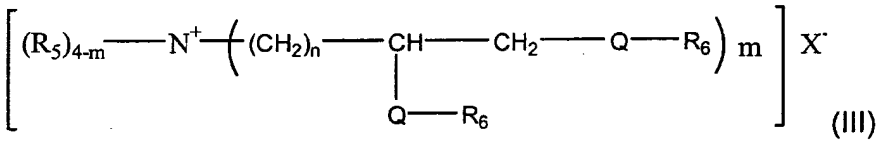
atoms. X^- is a salt forming anion, compatible with quaternary ammonium compounds and other adjunct ingredients.

Preferred quaternary ammonium compounds of this type are quaternised amines having the general formula (I) where R_1 & R_2 are methyl or hydroxyethyl and R_3 & R_4 are linear or branched alkyl or alkenyl chains comprising at least 11 atoms, preferably at least 15 carbon atoms.

(b) quaternary ammonium compounds according to general formula (II) or (III):

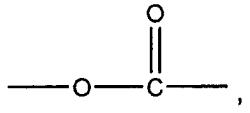


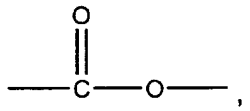
(II)

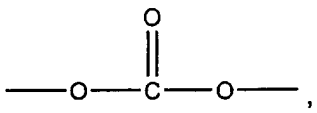


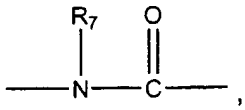
(III)

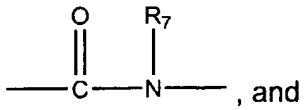
wherein, each R_5 unit is independently selected from hydrogen, branched or straight chain C_1-C_6 alkyl, branched or straight chain C_1-C_6 hydroxyalkyl and mixtures thereof, preferably methyl and hydroxyethyl; each R_6 unit is independently linear or branched C_{11}-C_{22} alkyl, linear or branched C_{11}-C_{22} alkenyl, and mixtures thereof; X^- is an anion which is compatible with skin care actives and adjunct ingredients; m is from 1 to 4, preferably 2; n is from 1 to 4, preferably 2 and Q is a carbonyl unit selected from:







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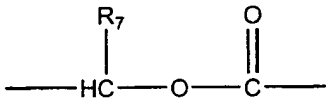
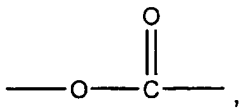


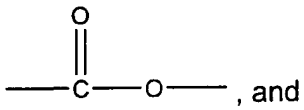
wherein R_7 is hydrogen, C_1-C_4 alkyl, C_1-C_4 hydroxyalkyl, and mixtures thereof.

In the above quaternary ammonium compound example, the unit $-QR_6$ contains a fatty acyl unit which is typically derived from a triglyceride source. The triglyceride source is preferably derived from tallow, partially hydrogenated tallow, lard, partially hydrogenated lard, vegetable oils and/or partially hydrogenated vegetable oils, such as, canola oil, safflower oil, peanut oil, rapeseed oil, sunflower oil, corn oil, soybean oil, tall oil, rice bran oil, etc. and mixtures of these oils.

The counterion, X^- in the above compounds, can be any compatible anion, preferably the anion of a strong acid, for example, chloride, bromide, methylsulfate, ethylsulfate, sulfate, nitrate and the like, more preferably chloride or methyl sulfate. The anion can also, but less preferably, carry a double charge in which case X^- represents half a group.

The preferred quaternary ammonium compounds of the present invention are the diester and/or diamide Quaternary Ammonium (DEQA) compounds, the diesters and diamides having general formula (II), wherein the carbonyl group Q is selected from:

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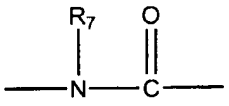
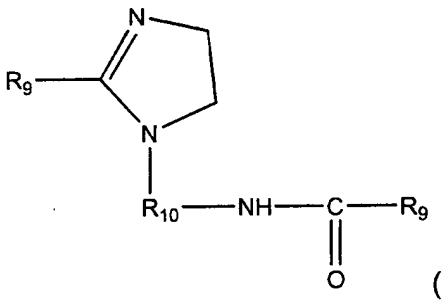


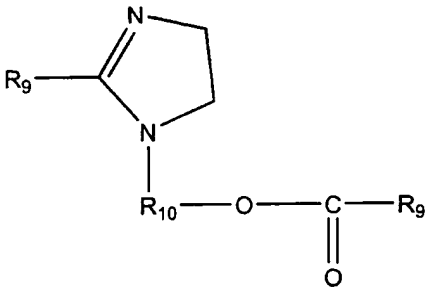
Tallow, canola and palm oil are convenient and inexpensive sources of fatty acyl units which are suitable for use in the present invention as R_6 units.

The counterion, X^-, can be chloride, bromide, methylsulfate, formate, sulfate, nitrate, and mixtures thereof. In fact, the anion, X, is merely present as a counterion of the positively charged quaternary ammonium compounds. The scope of this invention is not considered limited to any particular anion.

As used herein, when the diester is specified, it will include the monoester and triester that are normally present as a result of the manufacture process.

(c) quaternary ammonium compounds according to general formula (IV) or (V):

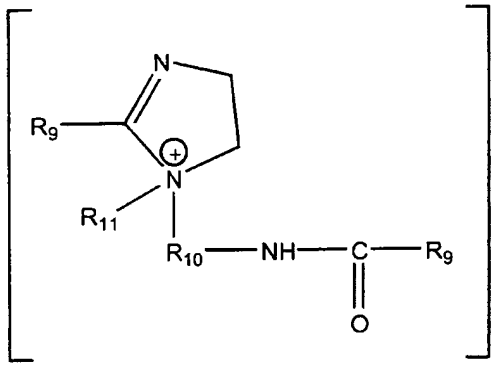

(IV)


(V)

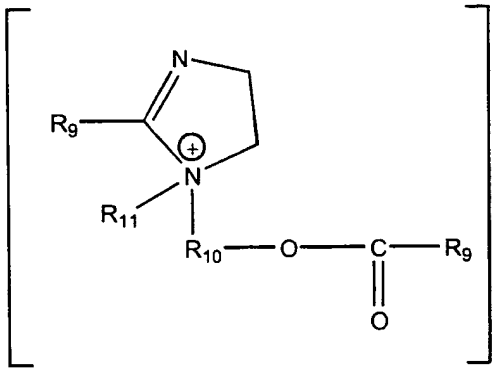
wherein R_9 is an acyclic aliphatic C_{15}-C_{21} hydrocarbon group and R_{10} is a C_1-C_6 alkyl or alkylene group.

These ammonium compounds, having a pKa value of not greater than about 4, are able to generate a cationic charge in situ when dispersed in an aqueous solution, providing that the pH of the final composition is not greater than about 6.

(d) quaternary ammonium compounds according to general formula (VI) or (VII):



(VI)



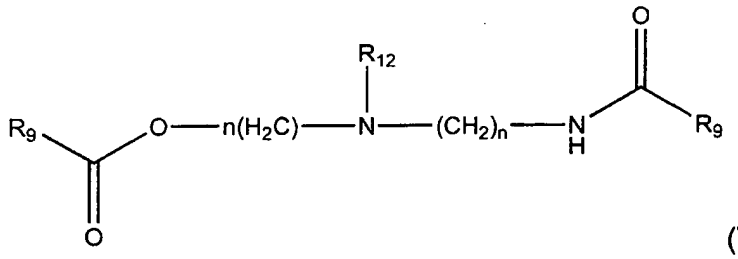
(VII)

wherein R_9 & R_{10} are as specified hereinabove and R_{11} is selected from C_1-C_4 alkyl and hydroxyalkyl groups.

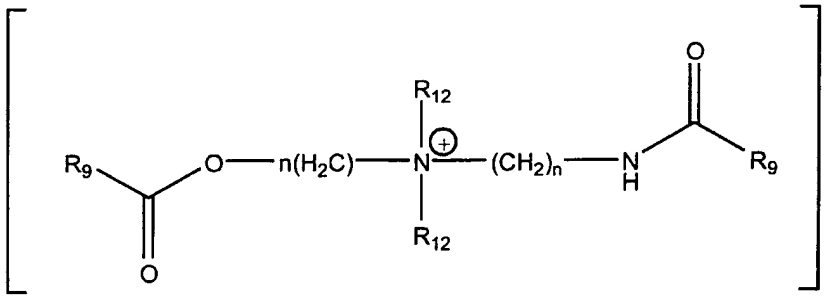
The counterion, X^-, can be chloride, bromide, methylsulfate, formate, sulfate, nitrate, and mixtures thereof. In fact, the anion, X, is merely present as a

counterion of the positively charged quaternary ammonium compounds. The scope of this invention is not considered limited to any particular anion.

(e) quaternary ammonium compounds according to general formula (VIII) or (IX):



(VIII)



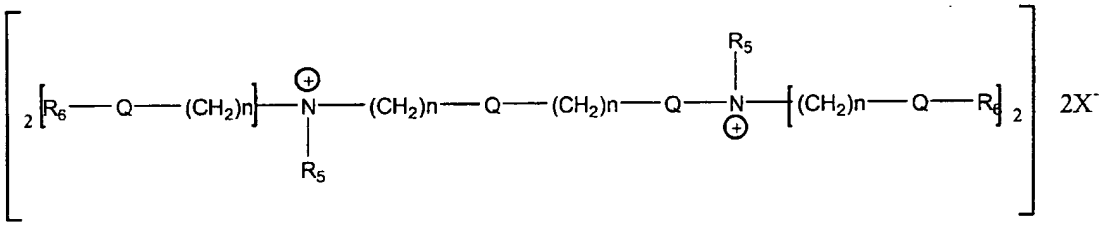
(IX)

wherein, n is from 1 to 6, R_9 is selected from acyclic aliphatic C_{15}-C_{21} hydrocarbon groups and R_{12} is selected from C_1-C_4 alkyl and hydroxyalkyl groups.

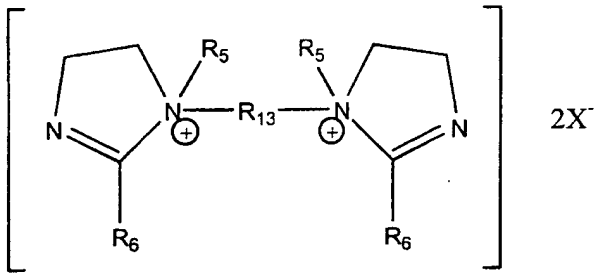
These ammonium compounds (VIII), having a pKa value of not greater than about 4, are able to generate a cationic charge in situ when dispersed in an aqueous solution, providing that the pH of the final composition is not greater than about 6.

The counterion, X^- (IX), can be chloride, bromide, methylsulfate, formate, sulfate, nitarte, and mixtures thereof. In fact, the anion, X, is merely present as a counterion of the positively charged quaternary ammonium compounds. The scope of this invention is not considered limited to any particular anion.

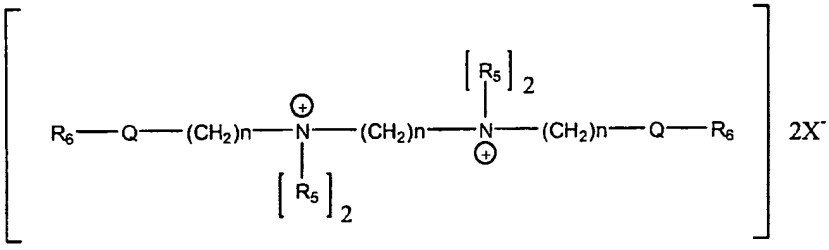
(f) diquaternary ammonium compounds according to general formula (X), (XI), (XII) or (XIII):



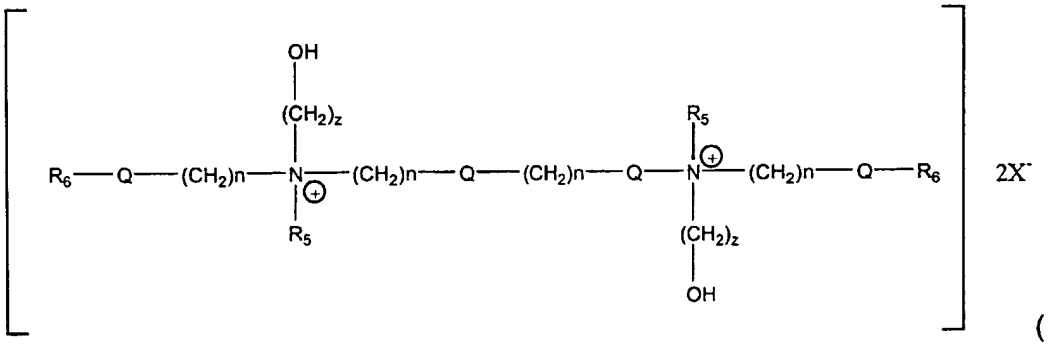
(X)



(XI)



(XII)

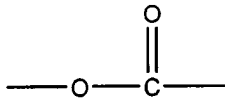


XIII)

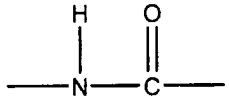
wherein R_5, R_6, Q, n & X^- are as defined hereinabove in relation to general formula (II) and (III), R_{13} is selected from C_1-C_6 alkylene groups, preferably an ethylene group and z is from 0 to 4.

(g) mixtures of the above quaternary ammonium compounds.

The preferred quaternary ammonium agents for use in the present invention are those described in section (b) hereinabove. In particular, diester and/or diamide quaternary ammonium (DEQA) compounds according to general formula (II) hereinabove are preferred. Preferred diesters for use herein are those according to general formula (II) wherein R_5, R_6, and X^- are as defined hereinabove and Q is:



Preferred diamides for use herein are those according to general formula (II) wherein R_5, R_6, and X^- are as defined hereinabove and Q is:



Preferred examples of quaternary ammonium compounds suitable for use in the compositions of the present invention are N,N-di(canolyl-oxy-ethyl)-N,N-dimethyl ammonium chloride, N,N- di(canolyl-oxy-ethyl)-N-methyl,N-(2-hydroxyethyl) ammonium methyl sulfate, N,N-di(canolyl-oxy-ethyl)-N-methyl, N-(2-hydroxyethyl) ammonium chloride and mixtures thereof. Particularly preferred for use herein is N,N-di(canolyl-oxy-ethyl)-N-methyl,N-(2-hydroxyethyl) ammonium methyl sulfate.

Although quaternary ammonium compounds are derived from "canolyl" fatty acyl groups are preferred, other suitable examples of quaternary ammonium compounds are derived from fatty acyl groups wherein the term "canolyl" in the above examples is replaced by the terms "tallowyl, cocoyl, palmyl, lauryl, oleyl,

ricinoleyl, stearyl, palmityl" which correspond to the triglyceride source from which the fatty acyl units are derived. These alternative fatty acyl sources can comprise either fully saturated, or preferably at least partly unsaturated chains.

Emollients

A second essential element of the compositions of the present invention is that they comprise emollient. Emollients tend to lubricate the skin, increase the smoothness and suppleness of the skin, prevent or relieve dryness of the skin, and/or protect the skin. A wide variety of suitable emollients are known and may be used herein. *Sagarin, Cosmetics, Science and Technology, 2nd Edition, Vol. 1, pp. 32-43 (1972)* contains numerous examples of materials suitable for use as emollients. Preferably the compositions of the present invention comprise greater than 1%, more preferably at least 5%, even more preferably at least 10%, still more preferably at least 20%, by weight, of emollient.

Preferably the emollients for use herein are selected from:

i) Straight and branched chain hydrocarbons having from about 7 to about 40 carbon atoms, such as dodecane, squalane, petrolatum, cholesterol and derivatives thereof, hydrogenated polyisobutylene, isohexadecane and the C_7-C_{40} isoparaffins, which are C_7-C_{40} branched hydrocarbons.

ii) C_1-C_{30} alcohol esters of C_1-C_{30} carboxylic acids and of C_2-C_{30} dicarboxylic acids, e.g. isononyl isononanoate, isopropyl myristate, myristyl propionate, isopropyl stearate, behenyl behenate, dioctyl maleate, diisopropyl adipate, and diisopropyl dilinoleate.

iii) mono-, di- and tri- glycerides of C_1-C_{30} carboxylic acids and ethoxylated derivatives thereof. Suitable polyethylene glycol derivatives of glycerides include PEG-20 almond glycerides, PEG-60 almond glycerides, PEG-11 avocado glycerides, PEG-6 capric/caprylic glycerides, PEG-8 capric/caprylic glycerides, PEG-20 corn glycerides, PEG-60 corn glycerides, PEG-60 evening primose glycerides, PEG-7 glyceryl cocoate, PEG-30 glyceryl cocoate, PEG-40 glyceryl cocoate, PEG-78 glyceryl cocoate, PEG-80 glyceryl cocoate, PEG-12 glyceryl dioleate, PEG-15 glyceryl isostearate, PEG-20 glyceryl isostearate, PEG-30 glyceryl isostearate, PEG-75 cocoa butter glycerides, PEG-20 hydrogenated palm oil glycerides, PEG-70 mango glycerides, PEG-13 mink glycerides, PEG-75 shorea butter glycerides, PEG-

10 olive glycerides, PEG-12 palm kernal glycerides, PEG-45 palm kernal glycerides, PEG-8 glyceryl laurate and PEG-30 glyceryl laurate. Mixtures of polyethylene glycol derivatives of glycerides can also be used herein.

iv) alkylene glycol esters of C_1-C_{30} carboxylic acids, e.g. ethylene glycol mono- and di- esters, and propylene glycol mono- and di- esters of C_1-C_{30} carboxylic acids e.g., ethylene glycol distearate.

v) Organopolysiloxane oils. The organopolysiloxane oil may be volatile, non-volatile, or a mixture of volatile and non-volatile silicones. The term "non-volatile" as used in this context refers to those silicones that are liquid under ambient conditions and have a flash point (under one atmospheric of pressure) of or greater than about 100°C. The term "volatile" as used in this context refers to all other silicone oils. Suitable organopolysiloxanes can be selected from a wide variety of silicones spanning a broad range of volatilities and viscosities. Non-volatile polysiloxanes are preferred. Suitable silicones are disclosed in U.S. Patent No. 5,069,897, issued December 3, 1991. Preferred for use herein are organopolysiloxanes selected from polyalkylsiloxanes, alkyl substituted dimethicones, dimethiconols, polyalkylaryl siloxanes, and mixtures thereof. More preferred for use herein are polyalkylsiloxanes and cyclomethicones. Preferred among the polyalkylsiloxanes are dimethicones.

vi) Vegetable oils and hydrogenated vegetable oils. Examples of vegetable oils and hydrogenated vegetable oils include safflower oil, castor oil, coconut oil, cottonseed oil, menhaden oil, palm kernel oil, palm oil, peanut oil, soybean oil, rapeseed oil, linseed oil, rice bran oil, pine oil, sesame oil, sunflower seed oil, partially and fully hydrogenated oils from the foregoing sources, and mixtures thereof.

vii) animal fats and oils, e.g. cod liver oil, lanolin and derivatives thereof such as acetylated lanolin and isopropyl lanolate. Lanolin oil is preferred.

viii) Also useful are C_4-C_{20} alkyl ethers of polypropylene glycols, C_1-C_{20} carboxylic acid esters of polypropylene glycols, and di- C_8-C_{30} alkyl ethers, examples of which include PPG-14 butyl ether, PPG-15 stearyl ether, dioctyl ether, dodecyl octyl ether, and mixtures thereof.

ix) polyol carboxylic acid esters.

x) mixtures of the above.

Preferred emollients for use in the compositions herein are selected from dodecane, squalane, cholesterol and derivatives thereof, isohexadecane, isononyl isononanoate, petrolatum, lanolin and derivatives thereof, safflower oil, castor oil, coconut oil, cottonseed oil, palm kernel oil, palm oil, peanut oil, soybean oil, polyol carboxylic acid esters and mixtures thereof. More preferred emollients for use herein are selected from polyol carboxylic acid esters, petrolatum and mixtures thereof.

These esters are derived from a sugar or polyol moiety and one or more carboxylic acid moieties. Depending on the constituent acid and sugar, these esters can be in either liquid or solid form at room temperature. Examples of liquid esters include: glucose tetraoleate, the glucose tetraesters of soybean oil fatty acids (unsaturated), the mannose tetraesters of mixed soybean oil fatty acids, the galactose tetraesters of oleic acid, the arabinose tetraesters of linoleic acid, xylose tetralinoleate, galactose pentaoleate, sorbitol tetraoleate, the sorbitol hexaesters of unsaturated soybean oil fatty acids, xylitol pentaoleate, sucrose tetraoleate, sucrose pentaoletate, sucrose hexaoleate, sucrose hepatoleate, sucrose octaoleate, and mixtures thereof. Examples of solid esters include: sorbitol hexaester in which the carboxylic acid ester moieties are palmitoleate and arachidate in a 1:2 molar ratio; the octaester of raffinose in which the carboxylic acid ester moieties are linoleate and behenate in a 1:3 molar ratio; the heptaester of maltose wherein the esterifying carboxylic acid moieties are sunflower seed oil fatty acids and lignocerate in a 3:4 molar ratio; the octaester of sucrose wherein the esterifying carboxylic acid moieties are oleate and behenate in a 2:6 molar ratio; and the octaester of sucrose wherein the esterifying carboxylic acid moieties are laurate, linoleate and behenate in a 1:3:4 molar ratio. A preferred solid material is sucrose polyester in which the degree of esterification is 7-8, and in which the fatty acid moieties are C18 mono- and/or di-unsaturated and behenic, in a molar ratio of unsaturates: behenic of 1:7 to 3:5. A particularly preferred solid sugar polyester is the octaester of sucrose in which there are about 7 behenic fatty acid moieties and about 1 oleic acid moiety in the molecule. Other materials include cottonseed oil or soybean oil fatty acid esters of sucrose. The ester materials are further described in, U. S. Patent No. 2,831,854, U. S. Patent No. 4,005,196, to Jandacek, issued January 25, 1977; U. S. Patent No. 4,005,195, to Jandacek,

issued January 25, 1977, U. S. Patent No. 5,306,516, to Letton et al., issued April 26, 1994; U. S. Patent No. 5,306,515, to Letton et al., issued April 26, 1994; U. S. Patent No. 5,305,514, to Letton et al., issued April 26, 1994; U. S. Patent No. 4,797,300, to Jandacek et al., issued January 10, 1989; U. S. Patent No. 3,963,699, to Rizzi et al, issued June 15, 1976; U. S. Patent No. 4,518,772, to Volpenhein, issued May 21, 1985; and U. S. Patent No. 4,517,360, to Volpenhein, issued May 21, 1985.

The polyol fatty acid polyesters suitable for use herein can be prepared by a variety of methods well known to those skilled in the art. These methods include: transesterification of the polyol with methyl, ethyl or glycerol fatty acid esters using a variety of catalysts; acylation of the polyol with a fatty acid chloride; acylation of the polyol with a fatty acid anhydride; and acylation of the polyol with a fatty acid, per se. See, for example, U.S. Patent No. 2,831,854; U.S. Patent No. 4,005,196, to Jandacek, issued January 25, 1977.

An especially preferred material is known by the INCI name sucrose polycottonseedate.

Polar Solvent

The compositions of the present invention must also comprise polar solvent. Any polar solvent suitable for use in cosmetic compositions may be used herein. However, the polar solvent must be sufficiently polar to drive the formation of vesicles in the present invention. Preferably the polar solvent used in the compositions of the present invention is water.

Preferably comprise the present compositions will comprise from 10% to 90%, more preferably from 20% to 80%, even more preferably from 30% to 60%, by weight, of polar solvent.

Vesicles

The compositions of the present invention must comprise vesicles, said vesicles comprising quaternary ammonium agent and emollient. As used herein the term "vesicle" means one or more bilayers arranged in a closed, usually spherical geometry, said bilayer comprises quaternary ammonium agent as described

hereinabove. In the compositions herein, the vesicles are preferably substantially spherical. The presence of vesicles in the present compositions can be detected by microscopic analysis (polarised light microscopy at a magnification of x60 using a Nikon Eclipse E800 microscope).

Preferably the vesicles herein have a number average size of from 0.01μm to 30μm, more preferably from 0.02 μm to 15μm.

Optional Ingredients

The compositions herein can contain a variety of optional components suitable for rendering the present compositions more cosmetically or aesthetically acceptable or to provide them with additional usage benefits. Such conventional optional ingredients are well-known to those skilled in the art. These include any cosmetically acceptable ingredients such as those found in the *CTFA International Cosmetic Ingredient Dictionary and Handbook, 7th edition, edited by Wenninger and McEwen, (The Cosmetic, Toiletry, and Fragrance Association, Inc., Washington, D.C., 1997)*. Some non-limiting examples of these optional ingredients are given below.

Humectant

A highly preferred optional ingredient for the compositions of the present invention is humectant. As used herein the term "humectant" means a substance which provides the skin with water-retention benefits. Preferably, the compositions of the present invention comprise at least 1%, more preferably at least 5%, even more preferably at least 10%, even more still preferably at least 20%, by weight of humectant.

Any humectant suitable for use in cosmetic compositions may be used herein. Non-limiting examples of suitable humectants for use in the present invention are described in WO98/22085, WO98/18444 and WO97/01326. Preferably the humectants for use herein are selected from, but not limited to; amino acids and derivatives thereof such as proline and arginine aspartate, 1,3-butylene glycol, propylene glycol and water and codium tomentosum extract, collagen amino acids or peptides, creatinine, diglycerol, biosaccharide gum-1, glucamine salts, glucuronic acid salts, glutamic acid salts, polyethylene glycol ethers of glycerine

(e.g. glycereth 20), glycerine, glycerol monopropoxylate, glycogen, hexylene glycol, honey, and extracts or derivatives thereof, hydrogenated starch hydrolysates, hydrolyzed mucopolysaccharides, inositol, keratin amino acids, urea, LAREX A-200 (available from Larex), glycosaminoglycans, methoxy PEG 10, methyl gluceth-10 and -20 (both commercially available from Amerchol located in Edison, NJ), methyl glucose, 3-methyl-1,3-butanediol, N-acetyl glucosamine salts, polyethylene glycol and derivatives thereof (such as PEG 15 butanediol, PEG 4, PEG 5 pentaerythitol, PEG 6, PEG 8, PEG 9), pentaerythitol, 1,2 pentanediol, PPG-1 glyceryl ether, PPG-9, 2-pyrrolidone-5-carboxylic acid and its salts such as glyceryl pca, saccharide isomerate, SEACARE (available from Secma), sericin, silk amino acids, sodium acetylhyaluronate, sodium hyaluronate, sodium poly-aspartate, sodium polyglutamate, sorbeth 20, sorbeth 6, sugar and sugar alcohols and derivatives thereof such as glucose, mannose and polyglycerol sorbitol, trehalose, triglycerol, trimethyolpropane, tris (hydroxymethyl) amino methane salts, and yeast extract, and mixtures thereof.

More preferably, the humectants for use herein are selected from glycerine, urea, butylene glycol, polyethylene glycol and derivatives thereof, or mixtures thereof. Even more preferably, the humectants for use herein are selected from glycerine, urea and mixtures thereof, especially glycerine.

Other Skin Benefit Agents

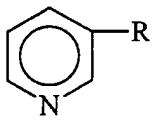
Other skin benefit agents may be useful in the compositions of the present invention. Examples of other skin benefit agents that may be used in the present compositions include:

(a) Vitamin Compounds

The present compositions may comprise vitamin compounds, precursors, and derivatives thereof. These vitamin compounds may be in either natural or synthetic form. Suitable vitamin compounds include, Vitamin A (e.g., beta carotene, retinoic acid, retinol, retinoids, retinyl palmitate, retinyl proprionate, etc.), Vitamin B (e.g., niacin, niacinamide, riboflavin, pantothenic acid, etc.), Vitamin C (e.g., ascorbic acid, etc.), Vitamin D (e.g., ergosterol, ergocalciferol, cholecalciferol, etc.), Vitamin E (e.g., tocopherol acetate, etc.), and Vitamin K (e.g., phytonadione, menadione, phthiocol, etc.) compounds. Preferred vitamin

compounds for use in the compositions of the present invention are vitamin B_3 compounds. Vitamin B_3 compounds are particularly useful for regulating skin condition as described WO-A-97/39733. When present, the compositions of the present invention preferably comprise from about 0.01% to about 50%, more preferably from about 0.1% to about 10%, even more preferably from about 0.5% to about 5%, by weight, of the vitamin B_3 compound.

As used herein, "vitamin B_3 compound" means a compound having the formula:



wherein R is $-CONH_2$ (i.e., niacinamide), -COOH (i.e., nicotinic acid) or $-CH_2OH$ (i.e., nicotinyl alcohol); derivatives thereof; and salts of any of the foregoing.

Exemplary derivatives of the foregoing vitamin B_3 compounds include nicotinic acid esters, including non-vasodilating esters of nicotinic acid, nicotinyl amino acids, nicotinyl alcohol esters of carboxylic acids, nicotinic acid N-oxide and niacinamide N-oxide.

Examples of suitable vitamin B_3 compounds are well known in the art and are commercially available from a number of sources, e.g., the Sigma Chemical Company (St. Louis, MO); ICN Biomedicals, Inc. (Irvin, CA) and Aldrich Chemical Company (Milwaukee, WI).

The vitamin compounds may be included as the substantially pure material, or as an extract obtained by suitable physical and/or chemical isolation from natural (e.g., plant) sources.

(b) Anti-Wrinkle and Anti-Skin Atrophy Actives

Examples of anti-wrinkle and anti-skin atrophy actives that may be used in the compositions of the present invention include, but are not limited to, lactic acid and derivatives thereof, retinoic acid and its derivatives (e.g., cis and trans); retinol; retinyl esters; niacinamide, salicylic acid and derivatives thereof; sulfur-

containing D and L amino acids and their derivatives and salts, particularly the N-acetyl derivatives, a preferred example of which is N-acetyl-L-cysteine; thiols, e.g., ethane thiol; hydroxy acids, phytic acid, lipoic acid; lysophosphatidic acid, and skin peel agents (e.g., phenol and the like).

(c) Antimicrobial and Antifungal Actives

Examples of antimicrobial and antifungal actives that may be used in the compositions of the present invention include, but are not limited to, ß-lactam drugs, quinolone drugs, ciprofloxacin, norfloxacin, tetracycline, erythromycin, amikacin, 2,4,4'-trichloro-2'-hydroxy diphenyl ether, 3,4,4'-trichlorocarbanilide, phenoxyethanol, phenoxy propanol, phenoxyisopropanol, doxycycline, capreomycin, chlorhexidine, chlortetracycline, oxytetracycline, clindamycin, ethambutol, hexamidine isethionate, metronidazole, pentamidine, gentamicin, kanamycin, lineomycin, methacycline, methenamine, minocycline, neomycin, netilmicin, paromomycin, streptomycin, tobramycin, miconazole, tetracycline hydrochloride, erythromycin, zinc erythromycin, erythromycin estolate, erythromycin stearate, amikacin sulfate, doxycycline hydrochloride, capreomycin sulfate, chlorhexidine gluconate, chlorhexidine hydrochloride, chlortetracycline hydrochloride, oxytetracycline hydrochloride, clindamycin hydrochloride, ethambutol hydrochloride, metronidazole hydrochloride, pentamidine hydrochloride, gentamicin sulfate, kanamycin sulfate, lineomycin hydrochloride, methacycline hydrochloride, methenamine hippurate, methenamine mandelate, minocycline hydrochloride, neomycin sulfate, netilmicin sulfate, paromomycin sulfate, streptomycin sulfate, tobramycin sulfate, miconazole hydrochloride, amanfadine hydrochloride, amanfadine sulfate, octopirox, parachlorometa xylenol, nystatin, tolnaftate, zinc pyrithione and clotrimazole.

(d) Sunscreen Actives

The compositions herein may also comprise sunscreening actives. A wide variety of sunscreen agents are useful herein. These sunscreen agents include both organic compounds and their salts as well as inorganic particulate materials. Without being limited by theory, it is believed that sunscreen agents provide protection from ultraviolet radiation by one or more of the following mechanisms including absorption, scattering, and reflection of the ultraviolet radiation. Nonlimiting examples of these sunscreen agents are described in

U.S. Patent No. 5,087,445, to Haffey et al., issued February 11, 1992; U.S. Patent No. 5,073,372, to Turner et al., issued December 17, 1991; U.S. Patent No. 5,073,371, to Turner et al. issued December 17, 1991; U.S. Patent No. 5,160,731, to Sabatelli et al., issued November 3, 1992; U.S. Patent No. 5,138,089, to Sabatelli, issued August 11, 1992; U.S. Patent No. 5,041,282, to Sabatelli, issued August 20, 1991; U.S. Patent No. 4,999,186, to Sabatelli et al., issued March 12, 1991; U.S. Patent No. 4,937,370, to Sabatelli, issued June 26, 1990; and Segarin, et al., at Chapter VIII, pages 189 et seq., of Cosmetics Science and Technology. Preferred among the sunscreen agents are those selected from the group consisting of 2-ethylhexyl p-methoxycinnamate, octyl salicylate, octocrylene, oxybenzone, 2-ethylhexyl N,N-dimethylaminobenzoate, p-aminobenzoic acid, 2-phenyl-benzimidazole-5-sulfonic acid, homomenthyl salicylate, DEA p-methoxycinnamate, 4,4'methoxy-t-butyldibenzoylmethane, 4-isopropyldibenzoylmethane, 3-(4-methylbenzylidene) camphor, 3-benzylidene camphor, 4-N,N-dimethylaminobenzoic acid ester with 2,4-dihydroxybenzophenone, 4-N,N-dimethylaminobenzoic acid ester with 2-hydroxy-4-(2-hydroxyethoxy)benzophenone, 4-N,N-dimethylaminobenzoic acid ester with 4-hydroxydibenzoyl- methane, 4-N,N-dimethylaminobenzoic acid ester with 4-(2-hydroxyeth-oxy)dibenzoylmethane, 4-N,N-di(2-ethylhexyl)-aminobenzoic acid ester with 2,4-dihydroxybenzophenone, 4-N,N-di(2-ethylhexyl)aminobenzoic acid ester with 2-hydroxy-4-(2-hydroxyethoxy)benzophenone, 4-N,N-di(2-ethylhexyl)aminobenzoic acid ester with 4-hy-droxydibenzoylmethane, 4-N,N-di(2-ethylhexyl)aminobenzoic acid ester with 4-(2-hydroxyeth-oxy)dibenzoylmethane, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 2,4-dihydroxybenzophenone, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 2-hydroxy-4-(2-hydroxyethoxy)benzophenone, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 4-hy-droxydibenzoylmethane, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 4-(2-hydroxyeth-oxy)dibenzoylmethane, titanium dioxide, zinc oxide, iron oxide, and mixtures thereof.

More preferred for use in the compositions described herein are the sunscreen agents selected from the group consisting of 2-ethylhexyl N,N-dimethyl-p-aminobenzoate, 2-ethylhexyl p-methoxycinnamate, octocrylene, octyl salicylate,

homomenthyl salicylate, p-aminobenzoic acid, oxybenzone, 2-phenylbenzimidazole-5-sulfonic acid, DEA p-methoxycinnamate, 4,4'-methoxy-t-butyldibenzoylmethane, 4-isopropyl dibenzoylmethane, 3-(4-methylbenzylidene) camphor, 3-benzylidene camphor, 4-N,N-(2-ethylhexyl)methylaminobenzoic acid ester with 4-(2-hydroxyeth-oxy)dibenzoylmethane, titanium dioxide, zinc oxide, iron oxide, and mixtures thereof.

Exact amounts of sunscreens which can be employed will vary depending upon the sunscreen chosen and the desired Sun Protection Factor (SPF) to be achieved. SPF is a commonly used measure of photoprotection of a sunscreen against erythema. See Federal Register, Vol. 43, No. 166, pp. 38206-38269, August 25, 1978.

Thickeners

The compositions of the present invention preferably comprise thickeners. Any thickener suitable for use in cosmetic compositions can be used herein. Preferred thickeners are selected from nonionic water-soluble polymers, fatty alcohols and mixtures thereof. Suitable nonionic polymers include such water soluble polymers as cellulose ethers (e.g. hydroxybutyl methyl cellulose, hydroxypropylcellulose, hydroxypropyl methyl cellulose, ethylhydroxy ethyl cellulose, hydrophobically modified hydroxyethyl cellulose and hydroxyethylcellulose), poly(ethylene oxide), polyvinyl alcohol, polyvinylpyrrolidone, hydroxypropyl guar gum, amulose, hydroxyethyl amylose, starch, and starch derivatives. Suitable fatty alcohols are higher molecular weight, nonvolatile, primary alcohols having the general formula

RCH2OH

wherein R is a C_{8-20} alkyl. They can be produced from natural fats or oils by reduction of the fatty acid COOH-grouping to the hydroxyl function. Alternatively, identical or similarly structured fatty alcohols can be produced according to conventional synthetic methods known in the art. Suitable fatty alcohols include, but are not limited to behenylalcohol, C_9-C_{11} alcohols, C_{12}-C_{13} alcohols, C_{12}-C_{15} alcohols, C_{12}-C_{16} alcohols, C_{14}-C_{15} alcohols, caprylic alcohol, cetearyl alcohol, coconut alcohol, decyl alcohol, isocetyl alcohol, isostearyl alcohol, lauryl alcohol,

oleyl alcohol, palm kernel alcohol, stearyl alcohol, cetyl alcohol, tallow alcohol, tridecyl alcohol or myristyl alcohol.

Other Optional Ingredients

The compositions of the present invention can comprise a wide range of other optional components. These additional components should be pharmaceutically acceptable. Non-limiting examples of functional classes of ingredients suitable for use in the compositions of the present invention include: abrasives, absorbents, anti-acne actives, anticaking agents, anti-dandruff agents, anti-perspirant agents, antioxidants, anti-viral actives, artificial tanning actives and accelerators, biological additives, bleach, bleach activators, brighteners, builders, buffering agents, chelating agents, chemical additives, colorants, cosmetics, cleansers, cosmetic astringents, cosmetic biocides, denaturants, deodorants, desquamation actives, depilatories, drug astringents, dyes, dye transfer agents, enzymes, external analgesics, foam generators, flavours, film formers, fragrance components, insect repellents, mildewcides, non-steroidal anti-inflammatory active, opacifying agents, oxidative dyes, oxidising agents, pest control ingredients, pH adjusters such as citric acid, pH buffers, pharmaceutical actives, plasticizers, preservatives, radical scavengers, skin, hair or nail bleaching agents, skin, hair or nail conditioners, skin, hair or nail penetration enhancers, stabilisers, surfactants, surface conditioners, reducing agents, temperature depressors, viscosity modifiers, and warmth generators such as exothermic zeolites. Also useful herein are aesthetic components such as colourings, essential oils, and skin healing agents. Other optional materials herein include pigments. Pigments suitable for use in the compositions of the present invention can be organic and/or inorganic. Also included within the term pigment are materials having a low colour or lustre such as matte finishing agents, and also light scattering agents. Examples of suitable pigments are iron oxides, acyglutamate iron oxides, titanium dioxide, ultramarine blue, D&C dyes, carmine, and mixtures thereof.

Formulation Process

The compositions of the present invention are prepared in such a way that the quaternary ammonium compound forms vesicles. Said vesicles also comprise emollient. Preferably said vesicles also comprise humectant. In order to ensure

optimal performance characteristics it is preferred that the compositions of the present invention are prepared as follows:

(i) all or part of the quaternary ammonium agent is mixed with humectant, water soluble skin care actives (where included), and, preferably, polar solvent at a temperature which is higher than the melting point of the quaternary ammonium agent;

(ii) optionally, the mixture is vigorously agitated;

(iii) In a separate vessel the emulsion is prepared as follows; the oil phase containing the emollients, the relevant thickener in case the said thickener is oil soluble, and any remaining quaternary ammonium agent are mixed together at a temperature which is higher than the melting point of the quaternary ammonium compound. The aqueous phase is prepared separately. The water, the relevant thickener in case the said thickener is water soluble, and any remaining water soluble ingredients are heated to the same temperature as the oil phase.

(iv) the temperature of the oil and aqueous phases of the emulsion are then approximately equalised and the aqueous phase is combined with the oil phase with agitation.

(v) On production of the emulsion the mixture formed in step (i) is added to the aforementioned emulsion with agitation.

Method of Use

The cosmetic compositions of the present invention may be used in a conventional manner for the treatment of skin. An effective amount of the composition, typically from about 0.1 grams to about 50 grams, preferably from about 1 gram to about 20 grams, is applied to wet or dry, preferably wet, skin. Application of the composition typically includes working the composition into the skin, generally with the hands and fingers. The composition is then left on the skin or, preferably, the skin is rinsed.

The preferred method of treating the skin, therefore, comprises the steps of:

(a) applying an effective amount of the cosmetic composition to the skin,

(b) rinsing the skin.

A preferred aspect of the present invention involves the above method with an application of the composition on dry skin before an application on wet skin. Therefore, a preferred method comprises:
(i) applying to dry skin an effective amount of the cosmetic composition;
(ii) rinsing the skin under a shower;
(iii) further application of said composition; and
(iv) further rinsing.

Much of the damage to human skin is caused by repeated exposure to surfactant containing compositions during washing routines. It has been found that this damage can be mitigated using the present compositions. Therefore, another preferred method comprises:
(i) washing the skin using a composition comprising surfactants;
(ii) rinsing the skin;
(iii) applying to the wet skin a composition according to the present invention;
(iv) rinsing the skin.

It has also been found that the present compositions are particularly useful when incorporated as part of a regular routine. Therefore, another preferred method comprises:
(i) applying to the skin a composition comprising:
    (a) at least one quaternary ammonium compound;
    (b) humectant; and
(ii) rinsing the skin;
(iii) repeating steps (i) and (ii) within 48 hours.

The present compositions can also be useful in mitigating damage caused by exposure of the skin to ultra violet radiation, damage caused by exposure of the skin to water during swimming or similar water based exercise, damage caused by shaving or exfoliation or damage caused by exposure of the skin to water during bathing.

Examples

The following examples further illustrate the preferred embodiments within the scope of the present invention. The examples are given solely for the purposes

of illustration and are not to be construed as limitations of the present invention as many variations of the invention are possible without departing from its spirit or scope. Unless otherwise indicated, all ingredients are expressed on a weight percentage of the active ingredient.

Example	1	2	3	4	5	6	7	8	9	10	11	12	13	
	Weight %													
Quaternary Ammonium Agent (see notes below)	3	3	3	3	3	3	3	3	3	3	3	3	3	*A*
Glycerine	32	32	32	32	32	32	32	-	-	-	-	-	-	*A*
Urea	-	-	-	-	-	-	-	22	22	22	22	22	22	*A*
Petrolatum	-	-	10	-	12	15	-	-	-	10	-	12	15	*B*
Lanolin [1]	-	-	-	7.5	5	-	15	-	-	-	10	10	-	*B*
Coronet Lanolin [1]	-	-	-	-	-	-	5	-	-	-	-	-	-	*B*
Super Sterol Esters [1]	-	-	-	-	-	-	5	-	-	-	-	-	-	*B*
Sefa Cottonate	21	21	12	12	-	-	-	21	21	12	12	-	-	*B*
Dimethicone 10Cst	-	0.5	0.5	0.5	-	0.5	0.5	0.5	-	-	-	0.5	0.5	*B*
Dimethicone 1000Cst	-	1.0	1.0	1.0	-	1.0	1.0	1.0	-	-	-	1.0	1.0	*B*
Cyclomethicone	-	2.5	2.5	2.5	-	2.5	2.5	2.5	-	-	-	2.5	2.5	*B*
FlorasunPEG-10 [2]	-	2	-	2	-	3	-	1	-	-	3	-	-	*B*
Methyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	*A*
Propyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	*B*
Disodium EDTA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	*A*
Sodium Benzoate	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	*B*
Niacinamide	5	5	3		5	5	5	3	5			5	5	*A*
Panthenol	3	3	1		3	3	3	1	3			3	3	*A*
Tocopherol Acetate	2	2	0.5		2	2	2	0.5	2			2	2	*B*

Retinol Palmitate	0.1	-	-	-	-	-	0.05	-	-	0.1	-	-	-	B
Parsol 1789 [3]	-	1	-	1	0.5	-	0.1	-	1	-	1	-	1	B
Parsol MCX [3]	-	5	-	5	2.5	-	0.5	-	5	-	5	-	5	B
Citric acid	1	0.5	1	0.5	0.5	1	0.5	1	0.3	0.75	1	1	1	A
Salicylic acid	-	0.5	-	0.5	0.5	-	0.5	-	0.7	-	-	-	-	A
Triethanolamine	0.1	-	-	0.1	0.1	-	-	-	0.1	-	-	0.9	0.5	C
Sodium Hydroxide	-	-	0.1	0.1	0.1	-	-	0.1	-	0.1	-	-	-	C
Polyquaternium 10	-		-	1.0		-	0.5	-	0.6	-	-	-	0.5	B
Polymer KG 30 [4]	-	0.7	-		0.7	-		-	-	0.8	-	-	-	B
Fragrance	0.5	0.5	0.5	0.5	0.5	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	E
Cetyl Alcohol	3	-	-	-	2.6	-	-	2.2	-	2.2	-	2.5	-	C
Stearyl Alcohol	2	-	-	-	1.5	-	-	3.2	-	1.1	-	1.6	-	C
Cetearyl Alcohol	-	-	4	-	0.4	-	-	-	3.4	-	-	-	3.4	C
Behenyl Alcohol	2	-	2	-	-	-	-	0.6	-	0.7	-	-	-	C
Natrosol 330 Plus	1	-	-	-	0.4	-	-	0.7	0.6		-	0.5	0.25	C
Natrosol 250 HHR	-	-	1	-	0.3	-	-	-	-	1.2	-	-	0.3	C
Jaguar HP 105 [5]	-	1.2	-	-	-	-	-	-	-	-	0.8	-	-	D
Jaguar C14S [5]	-	-	-	1	-	-	-	-	-	-	-	-	-	D
Jaguar C13S [5]	-	-	-	-	-	1.2	-	-	-	-	-	-	-	D
Xanthan Gum	-	-	-	-	-	-	2.0	-	-	-	-	-	-	D
Sodium Chloride	-	-	0.1	-	-	-	0.5	0.2	-	0.3	-	-	-	A
Water	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	A

Example	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	
	Weight %													
Quaternary Ammonium Agent (see notes below)	8	8	8	8	8	8	8	8	8	8	8	8	8	A
Glycerine	32	32	32	32	32	32	32	-	-	-	-	-	-	A
Urea	-	-	-	-	-	-	-	22	22	22	22	22	22	A
Petrolatum	-	-	10	-	12	15	-	-	-	10	-	12	15	B

Lanolin [1]	-	-	-	7.5	5	-	15	-	-	-	10	10	-	B
Coronet Lanolin [1]	-	-	-	-	-	-	5	-	-	-	-	-	-	B
Super Sterol Esters [1]	-	-	-	-	-	-	5	-	-	-	-	-	-	B
Sefa Cottonate	21	21	12	12	-	-	-	21	21	12	12	-	-	B
Dimethicone 10Cst	-	0.5	0.5	0.5	-	0.5	0.5	0.5	-	-	-	0.5	0.5	B
Dimethicone 1000Cst	-	1.0	1.0	1.0	-	1.0	1.0	1.0	-	-	-	1.0	1.0	B
Cyclomethicone	-	2.5	2.5	2.5	-	2.5	2.5	2.5	-	-	-	2.5	2.5	B
Florasun PEG-10 [2]	-	2	-	2	-	3	-	1	-	-	3	-	-	B
Methyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	A
Propyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	B
Disodium EDTA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	A
Sodium Benzoate	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	B
Niacinamide	5	5	3		5	5	5	3	5			5	5	A
Panthenol	3	3	1		3	3	3	1	3			3	3	A
Tocopherol Acetate	2	2	0.5		2	2	2	0.5	2			2	2	B
Retinol Palmitata	0.1	-	-	-	-	0.05	-	-	-	-	-	-	0.15	B
Parsol 1789 [3]	-	1	-	1	0.5	-	0.1	-	1	-	1	-	1	B
Parsol MCX [3]	-	5	-	5	2.5	-	0.5	-	5	-	5	-	5	B
Citric acid	1	0.5	1	0.5	0.5	1	0.5	1	0.3	0.75	1	1	1	A
Salicylic acid	-	0.5	-	0.5	0.5	-	0.5	-	0.7	-	-	-	-	A
Triethanolamine	0.1	-	-	0.1	0.1	-	-	-	0.1	-	-	0.9	0.5	C
Sodium Hydroxide	-	-	0.1	0.1	0.1	-	-	0.1	-	0.1	-	-	-	C
Polyquat. 10	-		-	1.0		-	0.5	-	0.6	-	-	-	0.5	B
Polymer KG 30 [4]	-	0.7	-		0.7	-		-	-	0.8	-	-	-	B
Fragrance	0.5	0.5	0.5	0.5	0.5	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	E
Cetyl Alcohol	3	-	-	-	2.6	-	-	2.2	-	2.2	-	2.5	-	C
Stearyl Alcohol	2	-	-	-	1.5	-	-	3.2	-	1.1	-	1.6	-	C
Cetearyl Alcohol	-	-	4	-	0.4	-	-	-	3.4	-	-	-	3.4	C

Behenyl Alcohol	2	-	2	-	-	-	-	0.6	-	0.7	-	-	-	C
Natrosol 330 Plus	1	-	-	-	0.4	-	-	0.7	0.6		-	0.5	0.25	C
Natrosol 250 HHR	-	-	1	-	0.3	-	-	-	-	1.2	-	-	0.3	C
Jaguar HP 105 [5]	-	1.2	-	-	-	-	-	-	-	-	0.8	-	-	D
Jaguar C14S [5]	-	-	-	1	-	-	-	-	-	-	-	-	-	D
Jaguar C13S [5]	-	-	-	-	-	1.2	-	-	-	-	-	-	-	D
Xanthan Gum	-	-	-	-	-	-	2.0	-	-	-	-	-	-	D
Sodium Chloride	-	-	0.1	-	-	-	0.5	0.2	-	0.3	-	-	-	A
Water	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	A

Example	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
	Weight %															
Quaternary Ammonium Agent (see notes below)	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	A
Glycerine	15	16	22	9	8	9	-	32	32	32	32	32	32	32	32	A
Propylene Glycol	-	16	-	-	-	5	12	-	-	-	-	-	-	-	-	A
Butylene Glycol	-	-	8	8	-	8	12	-	-	-	-	-	-	-	-	A
Urea	-	-	-	12	-	2	9	-	-	-	-	-	-	-	-	A
Petrolatum	-	-	10	-	12	15	-	-	4	7.5	-	12	5	-	6	B
Lanolin [1]	-	-	-	7.5	7.5	-	15	-	3.5	-	3	-	-	-	-	B
Coronet Lanolin [1]	-	-	-	-	-	-	-	-	7	-	6.7	-	-	6	-	B
Super Sterol Esters [1]	-	-	-	-	-	-	-	-	3.5	-	6.5	-	3	6	3	B
Isohexadecane	-	-	-	-	-	-	-	-	-	5	-	3	-	-	3	B
Isononyl Isononanoate	-	-	-	-	-	-	-	-	-	3	-	5	-	-	-	B
Sefa Cottonate	21	21	12	12	-	-	-	13	-	8	-	-	8	12	10	B
Sefa Behenate	-	-	-	-	-	-	-	9	-	-	3	-	5	-	-	B
Dimethicone 10Cst	-	0.5	0.5	0.5	-	0.5	0.5	0.5	-	-	-	0.5	0.5	-	-	B
Dimethicone	-	1.0	1.0	1.0	-	1.0	1.0	1.0	-	-	-	1.0	1.0	-	-	B

1000Cst																
Cyclomethicone	-	2.5	2.5	2.5	-	2.5	2.5	2.5	-	-	-	2.5	2.5	-	-	B
Florasun PEG-10 [2]	-	2	-	2	-	3	-	1	-	-	3	-	-	2.5	-	B
Methyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	A
Propyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	B
Disodium EDTA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	A
Sodium Benzoate	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	B
Niacinamide	3	5	5			5	5	5	3	3		5	5	5	3	A
Panthenol	1	3	3			3	3	3	1	1		3	3	3	1	A
Tocopherol Acetate	0.5	2	2			2	2	2	0.5	0.5		2	2	2	0.5	B
Retinol Palmitate	-	-	-	0.1	-	0.05	-	-	0.1	-	-	-	-	-	-	B
Parsol 1789 [3]	-	1	-	1	0.5	-	1	-	1	-	1	-	0.1	1	-	B
Parsol MCX [3]	-	5	-	5	2.5	-	5	-	5	-	5	-	0.5	5	-	B
Citric acid	1	0.5	1	0.5	0.5	1	0.5	1	0.3	0.75	1	1	1	1	-	A
Salicylic acid	-	0.5	-	0.5	0.5	-	0.5	-	0.7	-	-	-	-	-	0.5	A
Triethanolamine	0.1	-	-	0.1	0.1	-	-	-	0.1	-	-	0.9	0.5	-	-	C
Sodium Hydroxide	-	-	0.1	0.1	0.1	-	-	0.1	-	0.1	-	-	-	-	0.6	C
Polyquaternium 10	-	-	-	1.0	-	-	0.5	-	0.6	-	-	-	0.5	1.0	-	B
Polymer KG 30 [4]	-	0.7	-	-	0.7	-		-	-	0.8	-	-	-	-	0.8	B
Fragrance	0.5	0.5	0.5	0.5	0.5	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	E
Cetyl Alcohol	3	-	-	-	2.6	-	-	2.2	-	2.2	-	2.5	-	-	3.2	C
Stearyl Alcohol	2	-	-	-	1.5	-	-	3.2	-	1.1	-	1.6	-	-	2.6	C
Cetearyl Alcohol	-	-	4	-	0.4	-	-	-	3.4	-	-	-	3.4	-	-	C
Behenyl Alcohol	2	-	2	-	-	-	-	0.6	-	0.7	-	-	-	-	0.2	C
Natrosol 330 Plus	1	-		-	0.4	-	-	0.7	0.6		-	0.5	0.25	-	0.6	C
Natrosol 250 HHR	-	-	1	-	0.3	-	-	-	-	1.2	-	-	0.3	-	-	C
Jaguar HP 105 [5]	-	1.2	-	-	-	-	-	-	-	-	0.8	-	-	-	-	D
Jaguar C14S [5]	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	D
Jaguar C13S [5]	-	-	-	-	-	1.2	-	-	-	-	-	-	-	0.8	-	D
Xanthan Gum	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	D
Sodium Chloride	-	-	0.1	-	-	-	0.5	0.2	-	0.3	-	-	-	0.2	0.1	A
Water	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	A

Example	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	

	Weight %															
Quaternary Amm. Agent (see notes)	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	A
Glycerine	15	16	22	9	8	9	-	32	32	32	32	32	32	32	32	A
Propylene Glycol	-	16	-	-	-	5	12	-	-	-	-	-	-	-	-	A
Butylene Glycol	-	-	8	8	-	8	12	-	-	-	-	-	-	-	-	A
Urea	-	-	-	12	-	2	9	-	-	-	-	-	-	-	-	A
Petrolatum	-	-	10	-	12	15	-	-	4	7.5	-	12	5	-	6	B
Lanolin [1]	-	-	-	7.5	7.5	-	15	-	3.5	-	3	-	-	-	-	B
Coronet Lanolin [1]	-	-	-	-	-	-	-	-	7	-	6.7	-	-	6	-	B
Super Sterol Esters [1]	-	-	-	-	-	-	-	-	3.5	-	6.5	-	3	6	3	B
Isohexadecane	-	-	-	-	-	-	-	-	-	5	-	3	-	-	3	B
Isononyl Isononanoate	-	-	-	-	-	-	-	-	-	3	-	5	-	-	-	B
Sefa Cottonate	21	21	12	12	-	-	-	13	-	8	-	-	8	12	10	B
Sefa Behenate	-	-	-	-	-	-	-	9	-	-	3	-	5	-	-	B
Dimethicone 10Cst	-	0.5	0.5	0.5	-	0.5	0.5	0.5	-	-	-	0.5	0.5	-	-	B
Dimethicone 1000Cst	-	1.0	1.0	1.0	-	1.0	1.0	1.0	-	-	-	1.0	1.0	-	-	B
Cyclomethicone	-	2.5	2.5	2.5	-	2.5	2.5	2.5	-	-	-	2.5	2.5	-	-	B
Florasun PEG-10 [2]	-	2	-	2	-	3	-	1	-	-	3	-	-	2.5	-	B
Methyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	A
Propyl Paraben	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	B
Disodium EDTA	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	A
Sodium Benzoate	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	B
Niacinamide	3	5	5			5	5	5	3	3		5	5	5	3	A
Panthenol	1	3	3			3	3	3	1	1		3	3	3	1	A
Tocopherol Acetate	0.5	2	2			2	2	2	0.5	0.5		2	2	2	0.5	B
Retinol Palmitate	-	-	-	-	-	-	-	-	0.05	-	-	0.1	-	-	-	B
Parsol 1789 [3]	-	1	-	1	0.5	-	1	-	1	-	1	-	0.1	1	-	B
Parsol MCX [3]	-	5	-	5	2.5	-	5	-	5	-	5	-	0.5	5	-	B
Citric acid	1	0.5	1	0.5	0.5	1	0.5	1	0.3	0.75	1	1	1	1	-	A
Salicylic acid	-	0.5	-	0.5	0.5	-	0.5	-	0.7	-	-	-	-	-	0.5	A
Triethanolamine	0.1	-	-	0.1	0.1	-	-	-	0.1	-	-	0.9	0.5	-	-	C

Sodium Hydroxide	-	-	0.1	0.1	0.1	-	-	0.1	-	0.1	-	-	-	-	0.6	C
Polyquaternium 10	-	-	-	1.0	-	-	0.5	-	0.6	-	-	-	0.5	1.0	-	B
Polymer KG 30 [4]	-	0.7	-	-	0.7	-		-	-	0.8	-	-	-	-	0.8	B
Fragrance	0.5	0.5	0.5	0.5	0.5	-	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	E
Cetyl Alcohol	3	-	-	-	2.6	-	-	2.2	-	2.2	-	2.5	-	-	3.2	C
Stearyl Alcohol	2	-	-	-	1.5	-	-	3.2	-	1.1	-	1.6	-	-	2.6	C
Cetearyl Alcohol	-	-	4	-	0.4	-	-	-	3.4	-	-	-	3.4	-	-	C
Behenyl Alcohol	2	-	2	-	-	-	-	0.6	-	0.7	-	-	-	-	0.2	C
Natrosol 330 Plus	1	-		-	0.4	-	-	0.7	0.6		-	0.5	0.2	-	0.6	C
Natrosol 250 HHR	-	-	1	-	0.3	-	-	-	-	1.2	-	-	0.3	-	-	C
Jaguar HP 105 [5]	-	1.2	-	-	-	-	-	-	-	-	0.8	-	-	-	-	D
Jaguar C14S [5]	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	D
Jaguar C13S [5]	-	-	-	-	-	1.2	-	-	-	-	-	-	-	0.8	-	D
Xanthan Gum	-	-	-	-	-	-	3.0	-	-	-	-	-	-	-	-	D
Sodium Chloride	-	-	0.1	-	-	-	0.5	0.2	-	0.3	-	-	-	0.2	0.1	A
Water	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	qs	A

1; Available from Croda

2; Available from Floratech, AZ, USA

3: Available from Hoffman La Roche, NJ, USA

4; Available from Amerchol, NJ, USA

5; Available from Rhodia, NJ, USA

Notes

- In examples 1,4,7,9,17,20,22,24,28,36,38,47,49,53,56 the quaternary ammonium compound used is Distearyl Dimethyl Ammonium Chloride supplied by Goldschmidt, trade name Varisoft TA100.
- In examples 2,3,5,6,8,10,15,16,18,19,21,23,26,27,31,33,34,35,37,41,45,46,48,50,51,52,54,55, the quaternary ammonium compounds used is N,N-di(canolyl-oxy-ethyl)-N methyl,N-(2-hydroxyethyl)Ammonium Methyl Sulfate supplied by Goldschmidt, trade name Rewoquat V3620.

- In Example 11 the quaternary ammonium compound used is N,N-di(canolyl-oxy-ethyl)-N methyl,N-(2-hydroxyethyl)Ammonium Methyl Sulfate supplied by Goldschmidt, trade name Rewoquat WE18
- In Example 12 the quaternary ammonium compound used is N,N-di(canolyl-oxy-ethyl)-N methyl,N-(2-hydroxyethyl)Ammonium Chloride supplied by Goldschmidt, developmental material (WE25)
- In Example13 the quaternary ammonium compound used is Methylbis(hydrogenated tallowamidoethyl)(2-hydroxyethyl)ammonium methyl sulfate supplied by Goldschmidt, trade name Varisoft 110.
- In Example 14 the quaternary ammonium compound used is Methylbis(tallowamidoethyl)(2-hydroxyethyl)ammonium methyl sulfate supplied by Goldschmidt, trade name Varisoft 222.
- In Example 25 the quaternary ammonium compound used is Methyl-1-tallowoylethyl-2-tallowimidazoline supplied by Goldschmidt, developmental material
- In Example 29 the quaternary ammonium compound used is Methyl-1-tallowamidoethyl-2-tallowimidazoline supplied by Goldschmidt, developmental material
- In Example 30 the quaternary ammonium compound used is Methyl-1-tallowoylethyl-2-tallowimidazolinium methyl sulfate supplied by Goldschmidt,
- In Example 32 the quaternary ammonium compound used is Methyl-1-tallowamidoethyl-2-tallowimidazolinium methyl sulfate supplied by Goldschmidt, trade name Varisoft 475, Varisoft 445
- In Example 39 the quaternary ammonium compound used is N,N-Dimethyl-N-(canolyl-oxy-ethyl)-N-(canolamidoethyl) amine, supplied by Kao.
- In Example 40 the quaternary ammonium compound used is N,N-Dimethyl-N-(canolyl-oxy-ethyl)-N-(canolamidoethyl) Ammonium Methyl Sulfate, supplied by Kao
- In Example 42 the quaternary ammonium compound used is N,N'-Bis(2-talloyloxyethyl)-N,N,N',N'-Tetramethylene Diammonium Dichloride, as disclosed in patents US 4728337, US 4721512, US 4906413 from Ciba-Geigy Corporation
- In Example 43 the quaternary ammonium compound used is N,N'-Bis(2-canolyloxyethyl)-N,N'-Dimethyl-N,N'-(2-Hydroxyethyl)-1,6-Hexane

Diammonium Methyl Sulfate, as disclosed in patents EP 0503155A1 & EP 0803498 from Goldschmidt-Witco.

- In Example 44 the quaternary ammonium compound used is the di and oligo ester quats made by the reaction of fatty acid, di functional (or multi functional) acid and triethanolamine followed by quaternisation as disclosed in WO98/49132 by Kao and US 5880289 by Henkel.

Process

For those examples including component C:

1. **Premix 1:** Combine components of group A together at a temperature greater than the transition temperature of the chosen quaternary ammonium compound, keeping back a predetermined part of the quaternary ammonium compound and water. Vigorously agitate this premix.
2. **Premix 2:** Combine components of groups B and C with the remaining parts of the quaternary ammonium compounds and water not previously used in premix 1. Heat above the melting point of the quat and the oils.
3. Combine Premix 1 & 2 and allow to cool until 40°C, stir in the perfume.

For those examples including component D:

1. **Premix 1:** Combine components of group A together at a temperature greater than the transition temperature of the chosen quaternary ammonium compound, keeping back a predetermined part of the water. Vigorously agitate this premix.
2. **Premix 2:** Combine with agitation the components of group D with the water not previously used in premix 1.
3. Combine Premix 1 & 2 and components of groups B & E. Vigorously agitate.

The compositions of the above examples provide good skin care benefits, such as good moisturisation, good hydration, good skin feel, good skin softness and/or good skin smoothness, with low levels of negatives such as greasiness, stickiness or tack.

Claims

1. A cosmetic composition comprising:
   (a) at least one quaternary ammonium agent;
   (b) emollient; and
   (c) polar solvent;
   wherein the composition comprises vesicles, said vesicles comprising quaternary ammonium compound and emollient.

2. A composition according to Claim 1 wherein the composition comprises 0.01%, more preferably at least 1%, by weight, of quaternary ammonium agent.

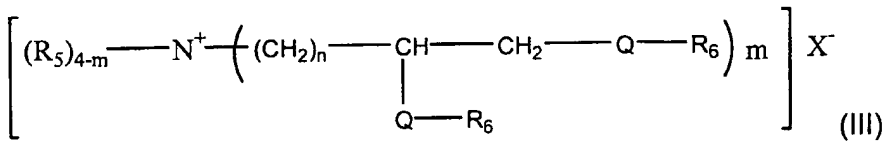
3. A composition according to Claim 1 or 2 wherein the composition comprises at least 1%, more preferably at least 5%, by weight of emollient.

4. A composition according to any of the preceding claims wherein the emollient is selected from dodecane, squalane, cholesterol and derivatives thereof, isohexadecane, isononyl isononanoate, petrolatum, lanolin and derivatives thereof, safflower oil, castor oil, coconut oil, cottonseed oil, palm kernel oil, palm oil, peanut oil, soybean oil, polyol carboxylic acid esters and mixtures thereof.

5. A composition according to any of the preceding claims wherein the vesicles have a number average size of from 0.01μm to 30μm, preferably from 0.02 μm to 15μm.

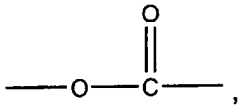
6. A composition according to any of the preceding claims wherein the quaternary ammonium agent is selected from those according to general formula (II) or (III):

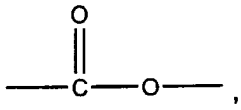
$$\left[(R_5)_{4-m}-N^+-\left(-(CH_2)_n-Q-R_6\right)_m\right] X^- \quad \text{(II)}$$

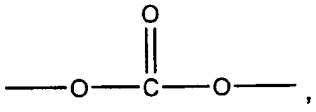


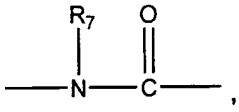
(III)

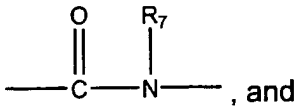
wherein, each R_5 unit is independently selected from hydrogen, branched or straight chain C_1-C_6 alkyl, branched or straight chain C_1-C_6 hydroxyalkyl and mixtures thereof, preferably methyl and hydroxyethyl; each R_6 unit is independently linear or branched C_{11}-C_{22} alkyl, linear or branched C_{11}-C_{22} alkenyl, and mixtures thereof; X^- is an anion which is compatible with skin care actives and adjunct ingredients; m is from 1 to 4, preferably 2; n is from 1 to 4, preferably 2 and Q is a carbonyl unit selected from:



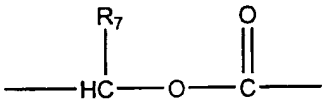








, and



wherein R_7 is hydrogen, C_1-C_4 alkyl, C_1-C_4 hydroxyalkyl, and mixtures thereof.

7. A composition according to any of the preceding claims wherein the quaternary ammonium agent is selected from N,N-di(canolyl-oxy-ethyl)-N,N-dimethyl ammonium chloride, N,N- di(canolyl-oxy-ethyl)-N-methyl,N-(2-hydroxyethyl) ammonium methyl sulfate, N,N-di(canolyl-oxy-ethyl)-N-methyl, N-(2-hydroxyethyl) ammonium chloride and mixtures thereof.

8. A composition according to any of the preceding claims wherein the polar solvent is water.

9. A composition according to any of the preceding claims wherein composition additionally comprises humectant.

10. Use of a composition according to any of the preceding claims for the treatment of skin.

INTERNATIONAL SEARCH REPORT

Intern ial Application No
PCT/US 00/17634

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61K7/00 A61K7/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, CHEM ABS Data, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	column 12; example 14 ---	7
Y	WO 96 03970 A (WITCO CORP) 15 February 1996 (1996-02-15) the whole document ---	7
X	WO 92 19214 A (RICHARDSON VICKS INC) 12 November 1992 (1992-11-12) page 12, last paragraph page 12, last paragraph examples 2,3 claims 1,3,4,7 --- -/--	1-6,8,10

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 October 2000	15/11/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Pelli Wablat, B

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INTERNATIONAL SEARCH REPORT

Intern ıal Application No
PCT/US 00/17634

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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